

### **What is claimed is:**

**(Claim 1)** A clutch assembly for a fan drive system of an engine comprising:  
a translatable clutch housing coupled to a fan;  
a rotating shaft coupling a drive pulley of the engine;  
a liner residing between and engageable with said translatable clutch housing and said rotating shaft;  
a clutch spring engaging said translatable clutch housing with said rotating shaft; and  
a spring carrier retaining at least a portion of said clutch spring and comprising at least one passage for fluid pressure adjustment within a clutch spring area.

**(Claim 2)** An assembly as in claim 1 wherein said at least one passage comprises at least one of a groove, a channel, a slot, and a hole.

**(Claim 3)** An assembly as in claim 1 wherein said at least one passage extends axially fore and aft across said spring carrier and allows for passage of a fluid therein.

**(Claim 4)** An assembly as in claim 1 wherein said at least one passage is formed integrally within a wall of said spring carrier.

**(Claim 5)** An assembly as in claim 1 wherein said at least one passage is formed integrally on an internal side of said spring carrier.

**(Claim 6)** An assembly as in claim 1 wherein said at least one passage resides between said spring carrier and a pneumatic transfer conduit.

**(Claim 7)** An assembly as in claim 1 wherein depth of said at least one passage is larger than a clearance between said spring retainer and a pneumatic transfer conduit.

**(Claim 8)** An assembly as in claim 1 wherein said at least one passage is formed integrally on an external side of said spring carrier.

**(Claim 9)** An assembly as in claim 1 wherein said at least one passage resides on a rear spring loading flange of said spring carrier.

**(Claim 10)** An assembly as in claim 1 further comprising a pneumatic transfer conduit, said spring carrier residing over said pneumatic transfer conduit.

**(Claim 11)** An assembly as in claim 10 wherein said at least one passage allows transfer of a fluid between said spring carrier and said pneumatic transfer conduit.

**(Claim 12)** An assembly as in claim 1 wherein said at least one passage allows for transfer of a fluid between at least one bearing assembly and a pneumatic transfer conduit.

**(Claim 13)** A clutch assembly for a fan drive system of an engine comprising:  
a translatable clutch housing coupled to a fan;  
a rotating shaft coupling a drive pulley of the engine;  
a liner residing between and engageable with said translatable clutch housing and said rotating shaft;  
a clutch spring engaging said translatable clutch housing with said rotating shaft; and  
a spring carrier retaining at least a portion of said clutch spring and comprising at least one axial passage for transfer of fluid through said spring carrier.

**(Claim 14)** An assembly as in claim 13 wherein said at least one passage comprises at least one of a groove, a channel, a slot, and a hole.

**(Claim 15)** An assembly as in claim 13 wherein said at least one passage extends axially fore and aft across said spring carrier and allows for passage of a fluid therein.

**(Claim 16)** An assembly as in claim 13 wherein said at least one passage is formed integrally within a wall of said spring carrier.

**(Claim 17)** An assembly as in claim 13 wherein said at least one passage is formed integrally on an internal side of said spring carrier.

**(Claim 18)** An assembly as in claim 13 wherein said at least one passage resides between said spring carrier and a pneumatic transfer conduit.

**(Claim 19)** An assembly as in claim 13 wherein depth of said at least one passage is larger than a clearance between said spring retainer and a pneumatic transfer conduit.

**(Claim 20)** An assembly as in claim 13 further comprising a pneumatic transfer conduit, said spring carrier residing over said pneumatic transfer conduit.

**(Claim 21)** An assembly as in claim 20 wherein said at least one passage allows transfer of a fluid between said spring carrier and said pneumatic transfer conduit.

**(Claim 22)** An assembly as in claim 13 wherein said at least one passage allows for transfer of a fluid between at least one bearing assembly and a pneumatic transfer conduit.

**(Claim 23)** A fluidically controlled fan drive system for an engine comprising:  
a fan;

a clutch assembly comprising;  
a translatable clutch housing coupled to said fan;  
a rotating shaft coupling a drive pulley of the engine; and  
a liner residing between and engageable with said translatable clutch housing and said rotating shaft;  
a clutch spring engaging said translatable clutch housing with said rotating shaft; and  
a spring retainer retaining at least a portion of said clutch spring and comprising at least one passage for fluid pressure adjustment within a clutch spring area;  
a solenoid fluidically coupled to said clutch assembly; and  
a controller fluidically actuating said translatable clutch housing via said solenoid.

**(Claim 24)** A system as in claim 23 wherein said controller pneumatically actuates said translatable clutch housing.

**(Claim 25)** A system as in claim 23 wherein said controller hydraulically actuates said translatable clutch housing.

**(Claim 26)** A method of operating a clutch assembly for an engine comprising:

receiving an engagement transition signal;  
altering fluid pressure within a piston reservoir in response to said engagement transition signal;  
translating a clutch housing to alter engagement with a rotating shaft in response to said alteration; and  
adjusting air pressure within a clutch spring area in response to said translation via a spring carrier having at least one passage.

**(Claim 27)** A method as in claim 26 wherein adjusting said air pressure air is forced out of said clutch spring area through said at least one passage when transitioning to a clutch disengaged state.

**(Claim 28)** A method as in claim 26 wherein adjusting said air pressure air is forced into said clutch spring area through said at least one passage when transitioning to a clutch engaged state.

**(Claim 29)** A clutch assembly for a fan drive system of an engine comprising:  
a translatable clutch housing coupled to a fan;  
a rotating shaft coupling a drive pulley of the engine;  
a liner residing between and engageable with said translatable clutch housing and said rotating shaft;  
a clutch spring engaging said translatable clutch housing with said rotating shaft; and

a piston rod comprising;  
a fluid channel for fluid pressure actuation of said clutch spring; and  
at least one passage for fluid pressure adjustment within a clutch spring area.

**(Claim 30)** A clutch assembly as in claim 29 wherein said at least one passage comprises an anti-lock groove that extends across a spring carrier and a bearing of the clutch assembly.